



ORIGINAL ARTICLE

Effectiveness of a training program for the management of risky alcohol use in primary care professionals based on motivational interviewing



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KEYWORDS

Health training;
 Primary care;
 Risky alcohol use;
 Motivational
 interview;
 Health advice

Abstract

Objective: To assess the effectiveness of a training program for Primary Care (PC) professionals developed to increase knowledge, attitudes, and skills for managing patients with risky alcohol use and in the motivational interview.

Design: Multicenter, two-arm parallel, randomized, open-label controlled clinical trial.

Setting: PC of the Andalusian Health Service.

Participants: The study was completed by 80 healthcare professionals from 31 PC centers.

Interventions: In both experimental and control groups, a workshop on managing patients with risky alcohol consumption and the resolution of two videotaped clinical cases with standardized patients were conducted. The experimental group attended a workshop on motivational interviewing.

Main measurements: Knowledge about managing risky alcohol use, clinical performance in patients with this health problem, and assessment of the motivational interview.

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◇ The names of the components of the ALCO-AP20 Collaborative Group are listed in [Annex 1](#).

PALABRAS CLAVE

Formación sanitaria;
Atención primaria;
Consumo de riesgo de
alcohol;
Entrevista
motivacional;
Consejos de salud

Results: Mean age was 39.50 ± 13.06 – SD – (95% CI: 36.59–42.41); 71.3% (95% CI: 61.1–80.9%) were women. The average score of both groups in the knowledge questionnaire before the training program was 15.10 ± 4.66 , becoming 21.99 ± 3.93 points after the training (95% CI: 5.70–7.92; $p < 0.001$). The experimental group showed an average score of 18.53 ± 13.23 before the intervention with the motivational interview and 28.33 ± 11.86 after this intervention ($p = 0.002$). In contrast, no significant variation was found in the score of the control group.

Conclusions: A training program aimed at PC professionals designed to increase knowledge on how to manage risky alcohol use and acquire communication skills in motivational interviewing is effective.

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Eficacia de un programa de formación para el manejo del consumo de riesgo de alcohol en profesionales de atención primaria basado en la entrevista motivacional

Resumen

Objetivo: Evaluar la efectividad de un programa de formación para profesionales de Atención Primaria (AP) para incrementar conocimientos, actitudes y habilidades en el manejo de pacientes con consumo de riesgo de alcohol y en la entrevista motivacional.

Diseño: Ensayo clínico controlado, abierto, aleatorizado, multicéntrico, paralelo de dos brazos. **Emplazamiento:** Centros de AP del Servicio Andaluz de Salud.

Participantes: Fue completado por 80 profesionales sanitarios de 31 centros.

Intervenciones: En el grupo experimental y en el control se realizó un taller de manejo de pacientes con consumo de riesgo de alcohol y la resolución de dos casos clínicos videograbados con pacientes estandarizados. El grupo experimental asistió a un taller sobre entrevista motivacional.

Mediciones principales: Conocimiento sobre el manejo del consumo de riesgo de alcohol, desempeño clínico en pacientes con este problema de salud y valoración de la entrevista motivacional.

Resultados: La edad media fue 39.50 ± 13.06 -DE- (IC 95%: 36,59-42,41); El 71,3% (IC 95%: 61,1%-80,9%) eran mujeres. La puntuación media en el cuestionario de conocimientos antes del programa de formación fue de $15,10 \pm 4,66$, siendo $21,99 \pm 3,93$ puntos después del entrenamiento (IC 95%:5,70-7,92; $p < 0,001$). La puntuación promedio del grupo experimental antes de la intervención con la entrevista motivacional era de $18,53 \pm 13,23$ y después de $28,33 \pm 11,86$ ($p = 0,002$). No se encontró variación significativa en la puntuación del grupo control.

Conclusiones: Un programa de formación para profesionales de AP, para incrementar el conocimiento sobre cómo gestionar el consumo de riesgo de alcohol y adquirir habilidades comunicativas en la entrevista motivacional es efectivo.

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Introduction

Alcohol is the most consumed psychoactive drug in Spain.¹ During 2010–2017, there were 15,489 deaths per year attributable to alcohol.² About 15% of patients attending Primary Care (PC) consultations present risky alcohol use.³ Given the magnitude of this problem, health professionals must acquire the knowledge and skills to address it effectively. However, recent studies reveal a specific lack of performance and management of patients with excessive alcohol consumption by PC professionals.^{4,5} It has been found that professionals with a higher level of training in managing alcohol consumption were more confident in facing the related problems in their patients and used

more appropriate strategies for patient management.⁶ A systematic review reported that the main reasons for not addressing the patient at risk are lack of time, low self-confidence about their ability to perform screening tests and provide brief advice, and lack of training.⁵

Given the poor training in addressing the risky alcohol use among PC professionals,⁷ it is evident the relevance of implementing training programs specifically designed for them to acquire the appropriate knowledge to address this health problem; evaluating the results of these activities is also convenient. A systematic review⁸ concluded that the implementation of training programs focused on improving the management of patients with risky alcohol use constitutes an effective strategy, encouraging population

screening and the use of the most appropriate intervention techniques, such as those based on motivational interviewing (MI). MI is cost-effective in treating toxic substance use, producing the same effects as specific treatments, and requiring less time and resources than these to achieve similar results.⁹

A study reported that a significant improvement was obtained in knowledge about managing alcohol consumption and MI skills¹⁰ through a training activity specifically designed for this purpose. Another study found that this type of training effectively improved MI skills, allowing the implementation of this communicative model in PC consultations.¹¹

Despite the evidence, it is still necessary to conduct more studies to corroborate the conclusions obtained so far and provide more consistency. With this purpose, the main objective of the present study was to assess whether a training program specifically designed for PC professionals, whose objective was to increase the knowledge, attitudes, and skills for managing patients with risky alcohol use and in MI, is effective.

Material and methods

Design

This study is a multicenter, two-arm parallel, randomized, open-label controlled trial.

Location

PC of the Andalusian Health Service.

Participants

Inclusion criteria: PC professionals who expressed their willingness to enroll in the training program and their explicit commitment to get involved as clinical researchers in a subsequent controlled clinical trial (CCT) aimed at demonstrating that MI is effective in addressing excessive alcohol consumption in patients attended in PC consulting rooms (ALCO-AP20 study).¹² Exclusion criteria: To have previous competencies and skills in MI or to refuse to participate in the study.

The population scope of the study was the health care professionals recruited through the Multiprofessional Teaching Unit of Family and Community Care of the Cordoba and Guadalquivir Health District, who were invited to participate.

Sample size and randomization

Based on a previous study,¹⁰ assuming an alpha risk of 0.05 and a beta risk of 0.2, it would be necessary to include 81 subjects, assuming that the initial proportion of knowledge that was considered "acceptable" (80% of correct questions in both groups) was 35% and after the training intervention, at least 60%.

The participating healthcare professionals were randomly assigned to the experimental group (EG) or the control group (CG), with the program EPIDAT 4.1.

Interventions

The 16-h training program was accredited by the Andalusian Health Quality Agency (ACSA, File 514/20,219) and consisted of the following activities:

Training interventions common to both groups:

- Workshop on management of patients with risky alcohol use: Its objective is to provide knowledge, attitudes, and specific skills on the management of patients with excessive alcohol consumption.
- Resolution of two practical, fictitious clinical cases with standardized patients. Before and after the training activities, the participants were videotaped performing consultations with two actors previously trained, simulating to be patients with suspected risky alcohol use. The two scripts of the interventions and the evaluations were conducted by two experts in alcohol consumption management and MI. For the evaluation, the experts provided feedback to each participant, using the Motivational Interview Rating Scale (EVEM).¹³

MI Workshop:

- The EG members also received specific brief training in MI.¹⁴ MI is a collaborative, patient-centered conversation style that boosts motivation, self-efficacy, and commitment to behavior change.¹⁵ Participants of the CG were trained in the usual health advice based on the information model, which consists of trying to persuade the patient to change behavior.¹⁶

Variables and sources of information

Independent variables: Through an online questionnaire, sociodemographic and employment data were collected, such as the profession, contractual relationship with the health system, time worked in PC, and information about their usual performance in a patient with excessive alcohol consumption.

Dependent variables: Level of knowledge on the management of risky alcohol use. Through a self-administered questionnaire consisting of 44 test questions, different aspects related to alcohol consumption were measured: (a) Importance and magnitude of the problem, (b) Concepts related to risky alcohol use, management of this problem in PC consultations, (c) Impact of drinking on families, and (d) Knowledge about its pharmacological treatment. These researchers considered the recommendations of the PAPPS.¹⁷

Evaluation of the standardized clinical interview: The EVEM¹³ was used to evaluate MI in the communicational health care professional-patient relationship in PC settings. EVEM comprises 14 items with a maximum total score of 56 points. After the standardized consultations, each participant received personalized training feedback on their 2 video recordings of the consultations by two experts in

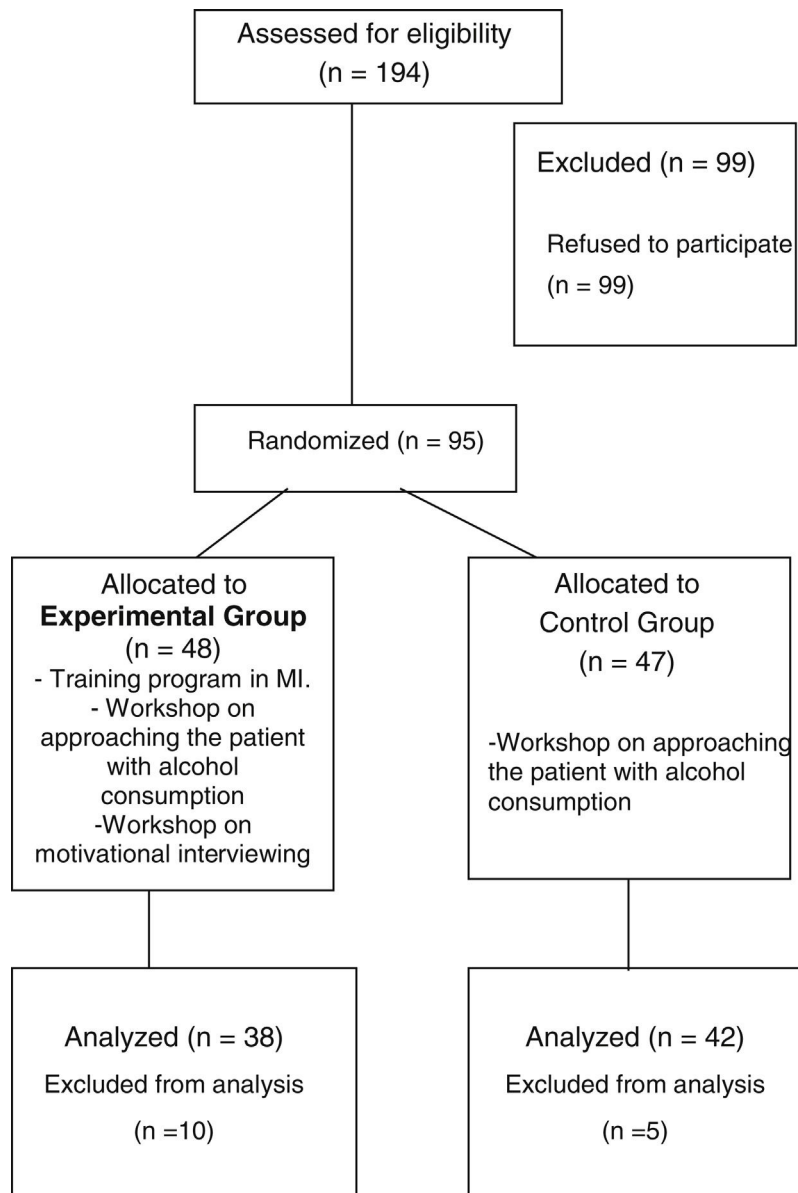
healthcare communication, after which they completed the EVEM questionnaire.

Statistical analysis

A descriptive analysis was performed. It was followed by an inferential analysis, with the estimation of the confidence intervals for 95% safety – 95%CI, and bivariate analysis to verify the differences between group, as well as the relationship between the socio-occupational variables and the level of knowledge of professionals, the performance when addressing the risky alcohol use, or the degree of use of MI, applying for it the tests of the Chi-square, the Student *T* test or the ANOVA for repeated measures, after check-

ing fit to a normal distribution of the outcome variables, using the Shapiro–Wilk test, otherwise using non-parametric tests, such as the Wilcoxon test. Bilateral contrasts were used ($p \leq 0.05$). The statistical program SPSS V.29 was used.

The research project received the authorization of the Management of the Health District Cordoba and Guadalquivir and the approval of the Clinical Research Ethics Committee of the Reina Sofia Hospital of Cordoba. Informed consent was requested that grants voluntary participation in the study of professionals and patients. The processing of the personal data of the subjects participating in the study was in accordance with the provisions of the European Data Protection Regulation and Organic Law 3/2018 on the Protection of Personal Data and the Guarantee of Digital Rights.



Study flowchart: Consort diagram.

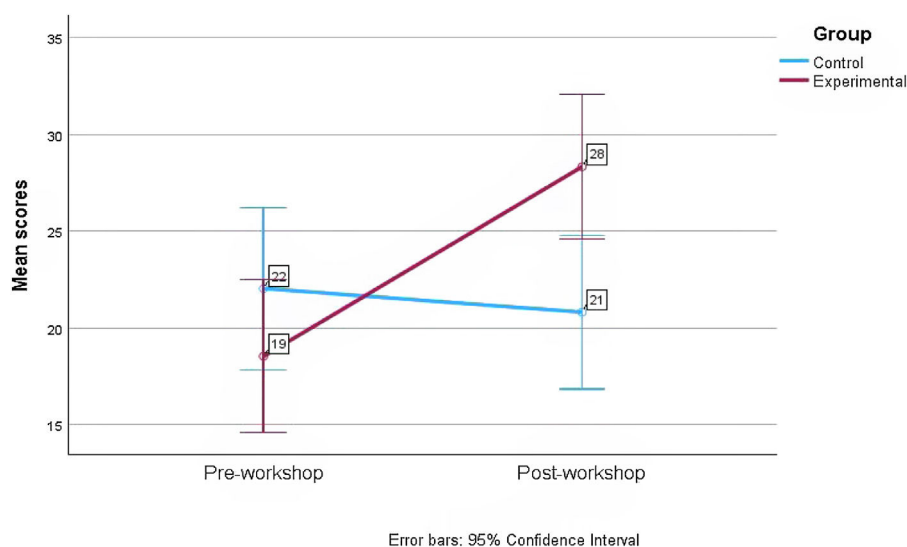


Figure 1 Mean scores obtained with the EVEM, before and after the motivational interview training workshop given to the participants of the experimental group, according to the comparison group.

Results

Physicians and nurses from PC, tutors of residents ($n=74$), and family and community medicine or nursing residents ($n=120$) of the Cordoba-Guadalquivir Health District were invited to participate in the study. A total of 95 professionals agreed to participate, of which 15 were excluded because they did not indicate in the registry the group to which they were assigned. Fig. 1 shows the flow chart for the study. Eighty professionals were assigned to one of the two study groups: 42 subjects to CG (52.5%) and 38 to EG (47.5%). The sociodemographic and occupational characteristics of the participants according to the allocation group are shown in Table 1.

A total of 37.5% of health professionals conduct a systematic examination of alcohol consumption in 35–64% of the time, whereas 25% conduct it in more than 65% of the time. Furthermore, 53.4% reported they administer a screening questionnaire to their patients in the case of suspected alcohol dependence or risky alcohol use on less than 35% of the occasions. A total of 67.5% of professionals reported providing health advice to decrease alcohol intake in the general population more than 65% of the time, 81.3% in pregnant women, and 57.5% in the case of users of dangerous machinery or motor vehicles. Table 2 shows the results for the issues in this section according to the allocation group.

As shown in Table 3, 78.8% (95%CI: 69.8–87.8%) of the professionals reported that their performance in a case of detection of risky consumption depends on the situation, and 90% (95%CI: 83.4–96.6%) refer patients to various sites, depending on the person, severity, and type of dependency. 12.5% (95%CI: 5.3–19.7%) reported following-up the patient with risky use on more than 90% of the occasions.

The average score of both groups, obtained in the knowledge questionnaire before the training program, was 15.10 ± 4.66 , becoming 21.99 ± 3.93 points after the training received ($p < 0.001$).

When analyzing the average scores according to the groups before and after the training workshop, significant differences were obtained in the average scores of the knowledge questionnaire. The score in the pre-workshop questionnaire in the EG was 16.29 ± 5.48 , becoming 21.44 ± 4.62 after the training intervention ($p < 0.001$). The score in the pre-workshop questionnaire in the CG was 13.85 ± 3.23 , becoming 22.41 ± 3.03 after the intervention ($p < 0.001$). Furthermore, when comparing the EG and the CG, significant differences were found between the total mean pre-workshop score ($p = 0.021$) but not in the score obtained with the post-workshop questionnaire ($p = 0.965$).

Statistically significant differences were found in each group when comparing the average knowledge scores before and after the training workshop ($F = 22.120$; $p < 0.001$), with no differences found when comparing these mean scores between both groups ($F = 0.880$; $p = 0.351$).

The average scores for each group based on the aspects measured in the knowledge questionnaire are listed in Table 4. Statistically significant differences were found in all the aspects contemplated, with an increase in the average scores when comparing these before and after the training workshop and in each group.

The mean score of the recordings in both groups before the training program was 20.20 ± 11.83 (95%CI: 17.36–23.02; limits: 3–51). The mean score in the EG before the MI intervention was 18.53 ± 13.23 and 28.33 ± 11.86 after it ($p = 0.002$), which represents an increase of 9.8 points on average in the EVEM scale (95%CI: 4.20–15.40).

Fig. 1 shows the mean scores obtained in each group before and after the MI intervention. Significant differences were found in the mean scores of all the items of the EG EVEM questionnaire before and after the MI intervention ($F = 10.186$; $p = 0.002$). No significant differences were found in the mean total scores or by dimensions evaluated in the EVEM questionnaire neither before nor after the intervention in the CG, that is, among those who had not received MI training.

Table 1 Sociodemographic and employment characteristics of the participants, according to the group.

	Total <i>n</i> = 80		Experimental group <i>n</i> = 38		Control group <i>n</i> = 42		<i>p</i> *
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Sex							
Male	23	28.8	10	26.3	13	31.0	0.647
Female	57	71.3	28	73.7	29	69.0	
Age (years)							
<30	31	38.8	12	32.4	19	44.2	0.246
30–45	20	25.0	8	21.6	12	27.9	
>45	29	36.3	17	45.9	12	27.9	
Civil status							
Married	37	46.3	21	55.3	16	38.1	0.107
Divorced	1	1.3	1	2.6	0	0.0	
Separated	1	1.3	0	0.0	1	2.4	
Single	39	48.8	14	36.8	25	59.5	
Widow	2	2.5	2	5.3	0	0.0	
Profession							
Family nurse	8	10.0	6	15.8	2	4.8	0.194
Family physician	26	32.5	22	57.9	24	57.1	
Resident (MIR)	46	57.7	16	26.3	16	38.1	
Type of employment contract							
Resident (MIR)	34	42.5	14	38.6	20	47.6	0.345
Eventual	13	16.3	7	18.4	6	14.3	
Interim	5	6.3	1	2.6	4	9.5	
Proprietor	28	35.0	16	42.1	12	28.6	
Working environment							
Rural	5	6.3	0	0.0	5	11.9	0.027
Semiurban	31	38.8	19	50.0	12	28.6	
Urban	44	55.0	19	50.0	25	59.5	
Resident trainer							
Yes	17	21.3	10	26.3	7	16.7	0.292
No	63	78.8	28	73.7	35	83.3	
Time worked							
<6 years	39	48.8	16	42.1	23	54.8	0.272
6–15 years	19	23.8	8	21.1	11	26.2	
16–25 years	11	13.8	6	15.8	5	11.9	
>25 years	11	13.8	8	21.1	3	7.1	

* Pearson's Chi-square test.

Table 5 shows the mean scores obtained in all the items of the EVEM questionnaire in each group before and after the intervention. Scores increased in all scale items when comparing before and after intervention in the EG. In contrast, they remained similar in the CG.

Discussion

Continuing professional education is a process of active and lifelong learning to which health professionals have the right and obligation, which is intended to update and improve the knowledge, skills, and attitudes of health professionals facing scientific and technological developments and

the demands and needs, both social and the health system itself.¹⁸ Thus, the specialists under training acquire the professional skills of their specialty in accredited schools and teaching units.

The results of the present study demonstrate the effectiveness of the training program designed on the one hand, to improve the level of knowledge of PC professionals in managing risky alcohol use. Furthermore, an increase in MI skills was demonstrated in the EG, which also received training in this type of communicational psychological therapy.

As noted in other studies,¹⁹ we have found a low level of knowledge among PC professionals about the health harms and consequences of excessive alcohol consumption and

Table 2 Preventive practice of health professionals regarding alcohol consumption according to assignment group.

Preventive practice of professionals health about alcohol consumption	Total (n = 80)		Experimental group (n = 38)		Control group (n = 42)		p*
	n	%	n	%	n	%	
<i>Systematic alcohol screening</i>							
<35%	30	37.5	10	27.0	20	46.5	0.054
36–64%	30	37.5	19	51.4	11	25.6	
>65	20	25.0	8	21.6	12	27.9	
<i>Completion of a screening questionnaire</i>							
<35%	43	53.8	19	51.4	24	55.8	0.044
36–64%	17	21.3	12	32.4	5	11.6	
>65%	20	25.0	6	16.2	14	32.6	
<i>Give health advice to the general population</i>							
<35%	12	15.0	5	13.5	7	16.3	0.914
36–64%	14	17.5	7	18.9	7	16.3	
>65	54	67.5	25	67.6	29	67.4	
<i>Give health advice to pregnant women</i>							
<35%	13	16.3	4	10.8	9	20.9	0.173
36–64%	2	2.5	0	0.0	2	4.7	
>65	65	81.3	33	89.2	32	74.4	
<i>Give abstention advice to users of dangerous machinery or motor vehicles</i>							
<35%	21	26.3	6	16.2	15	34.9	0.166
36–64%	13	16.3	7	18.9	6	14.0	
>65	45	57.5	24	64.9	22	51.2	

* Pearson's Chi-square test.

Table 3 Approach to the patient with risky consumption of alcohol, according to the assignment group.

	Total (n = 80)		Experimental group (n = 38)		Control group (n = 42)		p*
	n	%	n	%	n	%	
<i>Action in case of detection of alcohol dependence syndrome</i>							
I treat it myself	2	2.5	1	2.6	1	2.4	0.252
Referral to drug addiction	15	18.8	10	26.3	5	11.9	
Depends on the situation	63	78.8	27	71.1	36	85.7	
<i>Referral to alcohol-dependent patients</i>							
No	1	1.3	1	2.6	0	0	0.485
Alcoholics anonymous	0	0.0	0	0.0	0	0.0	
Various sites, depending on the person, severity and type of dependency	72	90.0	33	86.8	39	92.9	
Mental health and drug addiction	0	0.0	0	0.0	0	0.0	
Drug addiction	7	8.8	4	10.5	3	7.1	
<i>Follow-up of patients with risk consumption</i>							
<35%	43	53.8	16	42.1	27	64.3	0.021
36–64%	21	26.3	15	39.5	6	14.3	
>65	16	20.0	7	18.4	9	21.5	
<i>Degree to which they consider that their risk-consuming patients heed their advice</i>							
<35%	48	60.0	25	67.6	23	53.5	0.231
36–64%	26	32.5	11	29.7	15	34.9	
>65%	6	7.5	1	2.7	5	11.6	

* Pearson's Chi-square test.

Table 4 Pre-intervention and post-training intervention differences in the level of knowledge about the approach to alcohol consumption in each of the dimensions studied, according to the comparison group.

Measured aspects	Experimental group		p^*	Control group		p^*
	Pre-workshop Mean $\pm$ SD	Post-workshop Mean $\pm$ SD		Pre-workshop Mean $\pm$ SD	Post-workshop Mean $\pm$ SD	
Importance and magnitude of the problem	3.56 $\pm$ 1.97	5.02 $\pm$ 1.59	<0.001	3.21 $\pm$ 1.59	5.28 $\pm$ 1.54	<0.001
Concepts related to alcohol consumption	4.90 $\pm$ 1.87	5.76 $\pm$ 1.39	<0.001	4.33 $\pm$ 1.61	6.18 $\pm$ 0.99	<0.001
Detection and management of alcohol consumption	5.85 $\pm$ 1.88	7.15 $\pm$ 1.67	<0.001	4.95 $\pm$ 1.30	7.59 $\pm$ 1.31	<0.001
Impact of alcohol consumption on the family	0.54 $\pm$ 0.71	1.17 $\pm$ 0.71	<0.001	0.31 $\pm$ 0.521	1.44 $\pm$ 0.64	<0.001
Pharmacological treatment in drinking patients	1.44 $\pm$ 1.03	2.34 $\pm$ 1.09	<0.001	1.05 $\pm$ 0.61	1.92 $\pm$ 0.81	<0.001
Total	16.29 $\pm$ 5.48	21.44 $\pm$ 4.62	<0.001	13.85 $\pm$ 3.23	22.41 $\pm$ 3.01	<0.001

SD: standard deviation; 95% CI: 95% confidence interval.

* Wilcoxon test.

Table 5 Degree of competencies in motivational interviewing before and after the training workshop, according to the comparison group.

Measured attitudes and skills	Experimental group $n = 72$		p^*	Control group $n = 64$		p^*
	Pre-workshop Mean $\pm$ SD	Post-workshop Mean $\pm$ SD		Pre-workshop Mean $\pm$ SD	Post-workshop Mean $\pm$ SD	
1. Shows empathy	1.58 $\pm$ 0.97	2.27 $\pm$ 0.91	0.002	1.75 $\pm$ 0.80	1.62 $\pm$ 0.83	0.463
2. Facilities the patient position	1.39 $\pm$ 0.87	1.89 $\pm$ 0.82	0.013	1.47 $\pm$ 0.76	1.46 $\pm$ 0.62	0.990
3. Works concordantly with patient positioning	1.39 $\pm$ 1.40	2.28 $\pm$ 1.28	0.005	1.81 $\pm$ 0.96	1.50 $\pm$ 0.98	0.188
4. Use open questions	1.83 $\pm$ 1.00	2.58 $\pm$ 0.73	0.001	1.47 $\pm$ 0.98	1.22 $\pm$ 0.91	0.223
5. Do reflective listening	1.36 $\pm$ 0.99	1.94 $\pm$ 0.86	0.016	1.59 $\pm$ 0.76	1.38 $\pm$ 0.70	0.108
6. Make summaries	0.53 $\pm$ 0.56	0.81 $\pm$ 0.52	0.025	1.41 $\pm$ 0.87	1.44 $\pm$ 0.72	0.971
7. Validate the patient	0.86 $\pm$ 0.72	1.42 $\pm$ 0.91	0.003	1.22 $\pm$ 0.83	1.19 $\pm$ 0.78	0.936
8. Agree change goals with the patient	1.50 $\pm$ 0.91	2.25 $\pm$ 1.18	0.008	1.66 $\pm$ 1.12	1.63 $\pm$ 1.10	0.856
9. Promotes the design of an action plan with the patient	1.44 $\pm$ 0.97	2.31 $\pm$ 1.21	0.002	1.53 $\pm$ 1.22	1.66 $\pm$ 1.18	0.522
10. Handles discord	1.39 $\pm$ 1.57	2.19 $\pm$ 1.47	0.015	2.47 $\pm$ 1.40	2.16 $\pm$ 1.17	0.363
11. Evocation	1.31 $\pm$ 1.37	2.33 $\pm$ 1.17	0.001	1.38 $\pm$ 0.87	1.44 $\pm$ 1.88	0.645
12. Collaboration	1.36 $\pm$ 1.51	2.19 $\pm$ 1.14	0.007	1.31 $\pm$ 1.09	1.25 $\pm$ 1.27	0.973
13. Autonomy	1.28 $\pm$ 1.16	2.06 $\pm$ 0.98	0.003	1.22 $\pm$ 1.03	1.31 $\pm$ 1.06	0.687
14. Compassion	1.31 $\pm$ 1.12	1.81 $\pm$ 0.88	0.020	1.76 $\pm$ 0.90	1.56 $\pm$ 0.86	0.415
Total	18.53 $\pm$ 13.23	28.33 $\pm$ 11.86	0.002	22.03 $\pm$ 10.12	20.81 $\pm$ 10.55	0.550

* Wilcoxon test.

what strategy, or action plan should be followed to address this problem. We used the recommendations proposed by the PAPPs,^{17,20} a program that is a reference for many PC professionals in Spain.

It is known that a higher degree of knowledge is related to a more frequent practice of preventive management of risky alcohol use and a more proactive attitude.²¹ This level of knowledge is similar to that obtained in Romero's study.¹⁰ In our study, the level of knowledge improved after the training, the participants passed to answer correctly from 35% to 50% of the questions. However, the above-mentioned study showed a higher increase, with a 22.9% improvement after the intervention. The instructors in the training program were the same in both cases; therefore, this difference could be explained by various reasons related to the subjects who participated, such as a lower motivation or a lower percentage of resident participants.

The clinical communication skills of professionals have high relevance in the diagnostic, preventive, and therapeutic processes of patients with risky alcohol use.²² Of the various interventions to address toxic substance abuse, MI-based interventions are among the most evident in reducing consumption and causing behavioral changes in patients.^{23–25}

Regarding the attitudes and skills in MI evaluated in the participants, a significant improvement has been obtained, with an average on the EVEM scale of almost 10 points in the group of professionals who received the training intervention. If we compare the results obtained in the MI skills of our sample with the "MOTIVA" study,¹¹ we found a lower mean score in our study with the EVEM scale, where EG professionals obtained an improvement of 13.89 points on average. In comparison, Barragan et al. conducted a more complete and extensive training program, with other activities to improve MI skills. MI training requires a minimum of teaching hours and a developmental process, with repetitive and maintained practices for the health professional to assimilate and internalize this approach or therapeutic spirit.²⁶

Among the limitations of this study, a potential selection bias may occur because having participated in the study voluntarily presupposes a higher motivation, which can lead to an overestimation of the impact of the intervention. However, this bias is difficult to avoid, where there are also dropouts or withdrawals of participants due to different reasons. In our case, we had to exclude 15 professionals because they did not complete the initial questionnaires, which could be due to their low motivation.

Finally, we should point out the Hawthorne effect or observer bias.²⁷ However, this bias does not affect the results significantly, and the fundamental thing is that both the video recordings captured before and after the training interventions were recorded under similar conditions.

In conclusion, a structured training program on managing risky alcohol use, aimed at PC health professionals, is effective in increasing knowledge about this health problem. Similarly, the results indicate that the MI training implemented has met the objective of significantly improving the skills of healthcare professionals in using this communication tool.

What is known about the subject

- Excessive alcohol consumption is an important health problem in the world, especially in Western countries.
- The Primary Care level is the most appropriate setting for a preventive and intervention approach. Professionals have close contact with patients and can carry out longitudinal follow-up.
- Evaluating the effectiveness of training programs, such as those focused on motivational interviewing, is necessary before recommending their implementation.

What does this study contribute

- The tested training program has shown to be effective in increasing knowledge and skills to manage patients with risky excessive alcohol consumption.
- Professionals significantly increased their knowledge and skills in motivational interviewing after the conducted training intervention.

Ethical considerations

The study was approved for Clinical Research Ethics Committee of the Reina Sofia Hospital of Cordoba (January 8, 2021; reference: 4930) and written consent has been obtained from all patients.

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Conflict of interest

The authors declare that they have no conflict of interests.

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Annex 1.

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References

1. Encuesta sobre alcohol, drogas y otras adicciones en España (EADADES), 1995–2022. Madrid, 2022. Ministerio de Sanidad. Secretaría de Sanidad. Observatorio Español de las Drogas y las Adicciones. Delegación del Gobierno para el Plan Nacional sobre Drogas. Available from: <https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/encuestas.EADADES.htm> [consulted 5.10.23].
2. Monografía alcohol 2021. Consumo y consecuencias. Madrid, 2021. Ministerio de Sanidad. Observatorio Español de las Drogas y las Adicciones. Delegación del Gobierno para el Plan Nacional sobre Drogas. Available from: https://pnsd.sanidad.gob.es/profesionales/publicaciones/catalogo/catalogoPNSD/publicaciones/pdf/2021_Monografia.Alcohol.consumos_y_consecuencias.pdf [consulted 5.10.23].
3. Manual de consenso sobre alcohol en Atención Primaria. Barcelona, 2016. Ed. Socidrogalcohol. SEMG, SEMERGEN, SEMFYC, FAECAP. Available from: <https://www.yumpu.com/es/document/read/56308758/manual-de-consenso-sobre-alcohol-en-atencion-primaria> [consulted 30.9.23].
4. Romero Rodríguez E, Pérula de Torres LÁ, Moral RR, García JÁF, Rejano JMP, Villalobos AR, et al. Training health providers to address unhealthy alcohol use in primary care: a cross-sectional, multicenter study. BMC Health Serv Res. 2020, <http://dx.doi.org/10.1186/s12913-020-05730-4>.
5. Rosário F, Santos, MI, Angus K, Pas L, Ribeiro C, Fitzgerald, N, et al. Factors influencing the implementation of screening and brief interventions for alcohol use in primary care practices: a systematic review using the COM-B system and Theoretical Domains Framework. 2021, <https://doi.org/10.1186/s13012-020-01073-0>.
6. Kaner EF, Wutzke S, Saunders JB, Powell A, Morawski J, Bouix JC, et al. Impact of alcohol education and training on general practitioners' diagnostic and management skills: findings from a World Health Organization collaborative study. J Stud Alcohol. 2001, <http://dx.doi.org/10.15288/jsa.2001.62.621>.
7. Romero Rodríguez E, Pérula de Torres LÁ, Leiva-Cepas F, Fernández García JÁ, López SF, Muro MMR, et al. Knowledge, attitudes and preventive practices of primary health care professionals towards alcohol use: a national, cross-sectional study. PLOS ONE. 2019, <http://dx.doi.org/10.1371/journal.pone.0216199>.
8. Romero Rodríguez EM, Pérula de Torres LÁ, Linares Ruiz A, Fernández García JÁ, Parras Rejano JM, Roldán Villalobos A. Effectiveness of training programs on alcohol consumption in

- the Primary Care setting: systematic review. *Aten Primaria*. 2019, <http://dx.doi.org/10.1016/j.aprim.2018.07.004>.
9. Bóveda J, Pérula LA, Campiñez M, Bosch Fontcuberta JM, Barragán Brun N, Prados Castillejo JA. Evidencia actual de la entrevista motivacional en el abordaje de los problemas de salud en atención primaria. *Aten Primaria*. 2013, <http://dx.doi.org/10.1016/j.aprim.2013.01.014>.
 10. Romero-Rodríguez E, Pérula de Torres LA, Fernández García JA, Roldán Villalobos A, Ruiz Moral R, Parras Rejano JM. Impact of a primary care training program on the prevention and management of unhealthy alcohol use: a quasi-experimental study. *Patient Educ Couns*. 2019;102:2060–7, <http://dx.doi.org/10.1016/j.pec.2019.05.019>.
 11. Barragán-Brun N, Martín-Álvarez R, Bosch-Fontcuberta JM, Campiñez-Navarro M, Bóveda-Fontan J, Pérula-de-Torres LA. Impact of training on Motivational Interviewing (MI) for Family Physicians: design and assessment of a Training Program (MOTIVA). *Aten Primaria*. 2021;53:101961.
 12. Romero-Rodríguez E, Pérula-Jiménez C, Fernández-López S, Cabello-Gracia G, Fernández-García JA, Pérula-de Torres LA, et al. Effectiveness of a brief motivational intervention in the management of risky alcohol use in primary care: ALCO-AP20 study protocol. *Front Med*. 2023, <http://dx.doi.org/10.3389/fmed.2022.1008832>.
 13. Campiñez Navarro M, Pérula de Torres LA, Bosch Fontcuberta JM, Barragán Brun N, Arbonies Ortiz JC, Novo Rodríguez JM, et al. Measuring the quality of motivational interviewing in primary health care encounters: the development and validation of the motivational interviewing assessment scale (MIAS). *Eur J Gen Pract*. 2016, <http://dx.doi.org/10.1080/13814788.2016.1177508>.
 14. Rivera Mercadóa S, M. Villouta Cassinelli MF, Llabaca Grezb A. Entrevista motivacional: ¿cuál es su efectividad en problemas prevalentes de la atención primaria? *Aten Primaria*. 2008, <http://dx.doi.org/10.1157/13120020>.
 15. Miller WR, Rollnick S. *Motivational interviewing: helping people change*. 3rd ed. New York: Guilford Press; 2013.
 16. Mendoza F. La relación médico-paciente: consideraciones bioéticas. *Rev Peru Ginecol Obstet*. 2017 <http://scielo.org.pe/scielo.php?script=sci.arttext&pid=S2304-51322017000400007&lng=es>
 17. Córdoba García R, Camarrelles Guillem F, Muñoz Seco E, Gómez Puente JM, San José Arango J, Ramírez Manent JI, et al. Recomendaciones sobre el estilo de vida. Actualización PAPPs 2022 [PAPPs expert group: lifestyle recommendations]. *Aten Primaria*. 2022, <http://dx.doi.org/10.1016/j.aprim.2022.102442>.
 18. ¿Qué es la formación continuada? Ministerio de Sanidad. Available from: <https://www.sanidad.gob.es/areas/profesionales/Sanitarias/formacionContinuada/queEs.htm> [consulted 6.10.23].
 19. Johnson M, Jackson R, Guillaume L, Meier P, Goyder E. Barriers and facilitators to implementing screening and brief intervention for alcohol misuse: a systematic review of qualitative evidence. *J Public Health*. 2011, <http://dx.doi.org/10.1093/pubmed/fdq095>.
 20. Martín-Carrillo Domínguez P, Martín-Rabadán Muro M, González-Lama J, Romero-Rodríguez E, Pérula de Torres LA, Camarrelles Guillén F. Análisis de la situación, evaluación y propuestas de mejora del Programa de Actividades Preventivas y de Promoción de la Salud (PAPPs) [Analysis of the situation, evaluation and improvement proposals of the Preventive Activities and Health Promotion Program (PAPPs)]. *Aten Primaria*. 2020, <http://dx.doi.org/10.1016/j.aprim.2020.09.002>.
 21. Wilk AI, Jensen NM. Investigation of a brief teaching encounter using standardized patients: teaching residents alcohol screening and intervention. *J Gen Intern Med*. 2002, <http://dx.doi.org/10.1046/j.1525-1497.2002.10629.x>.
 22. Seale JP, Shellenberger S, Boltri JM, Okosun I, Barton B. Effects of screening and brief intervention training on resident and faculty alcohol intervention behaviours: a pre-post-intervention assessment. *BMC Fam Pract*. 2005, <http://dx.doi.org/10.1186/1471-2296-6-46>.
 23. Vasilaki E, Hosier SG, Cox WM. The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review. *Alcohol Alcohol*. 2006, <http://dx.doi.org/10.1093/alcalc/agl016>.
 24. Copeland L, McNamara R, Kelson M, Simpson S. Mechanisms of change within motivational interviewing in relation to health behaviors outcomes: a systematic review. *Patient Educ Couns*. 2015, <http://dx.doi.org/10.1016/j.pec.2014.11.022>.
 25. Rollnick S, Miller WR, Butler CC. *Motivational interviewing in health care: helping patients change behavior*. New York, London: Guilford Press; 2008.
 26. Rollnick S, Miller WR. ¿Qué es la entrevista motivacional? *Revista de Toxicomanías*. 1996;6:3–7.
 27. McCarney R, Warner J, Iliffe S, et al. The Hawthorne effect: a randomised, controlled trial. *BMC Med Res Methodol*. 2007, <http://dx.doi.org/10.1186/1471-2288-7-30>.